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HCMM Energy Budget Data as a Model Input for Assessing
Regions of High Potential Groundwater Pollution

(E78-10010) HCMM ENERGY BUDGET DATA AS A MODEL INPUT FOR ASSESSING REGIONS OF HIGH POTENTIAL GROUNDWATER POLLUTION Interim Report, Jul. - Sep. 1977 (South Dakota State Univ.) 14 p HC A02/MP A01	N78-10535 Unclass CSCL 08H G3/43 00010
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16. Abstract The Fortran computer program for a finite-difference soil temperature simulation model is presented. Modification of the original model during this reporting period included programming for computation of thermal conductivity for each 1 cm increment of the 50 cm soil profile with inputs of soil bulk density, thermal conductivity of the dry soil, and soil moisture. Soil temperatures were monitored for both an irrigated and nonirrigated soil profile to evaluate the accuracy of the simulation model.			
17. Key Words Suggested by Author HCMM, Remote Sensing, Thermal Inertia, Soil Temperature, Water Table, Finite-difference Model.		18. Distribution Statement	
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A. Problems

None

B. Accomplishments

The finite-difference model was modified to allow for changes in thermal conductivity with depth caused by variation in soil moisture. Field measurements were used to modify the model.

Both U-2 and RB-57 flights are scheduled for mid-October. During the next reporting period, test fields for the aircraft flights will be selected. Temperature and soil moisture profiles in the fields will be measured at the time of overflight. Aircraft data and field measurements will be used to evaluate effects of vegetation, soil moisture, and water-table depth on soil-temperature profiles. Development of procedures for manipulation and reduction of HCM data will begin.

C. Significant Results

In its original form the finite-difference model considered the top 50 cm of soil divided into layers 1 cm in thickness. The thermal conductivity of the soil was specified together with the solar radiation term of q_s and an initial temperature profile. The model then calculated the resulting heat flow between adjacent layers and the resulting change in temperature of each layer during each minute of time. Thus the model calculated temperature profiles as a function of time for the top 50 cm of soil.

The model was used to calculate the differences in surface temperature between two hypothetical sites which result from a

temperature difference at 50 cm due to the presence of shallow groundwater at one of the sites. Although qualitative results of the model seemed consistent with experimental results, further evaluation showed a need for taking account of differences in thermal conductivity due to different moisture profiles at the two sites considered.

During this reporting period, the model has been modified to allow input of different thermal conductivities to each of the 50 layers on both sites. Using the method by DeVries (1963) the computer program calculates the thermal conductivity of each soil layer if bulk density, dry conductivity, and moisture content of the soil are known. Thus, a surface temperature difference for two sites with different soil moisture conditions can be related to temperature difference at 50 cm which may be due to the presence of shallow groundwater at one of the sites.

The model in its present form is shown in Appendix A. Schematically the model may now be represented as shown in Fig. 1. This form was chosen for use in evaluating the model. Modifications are planned which will change the model to the format shown in Fig. 2 to estimate depth to water tables.

DeVries, D.A. 1963. Thermal Properties of Soils. In W.R. Van Wijk (ed.). Physics of the Plant Environment. North-Holland Publishing Co., Amsterdam. p. 210-235.

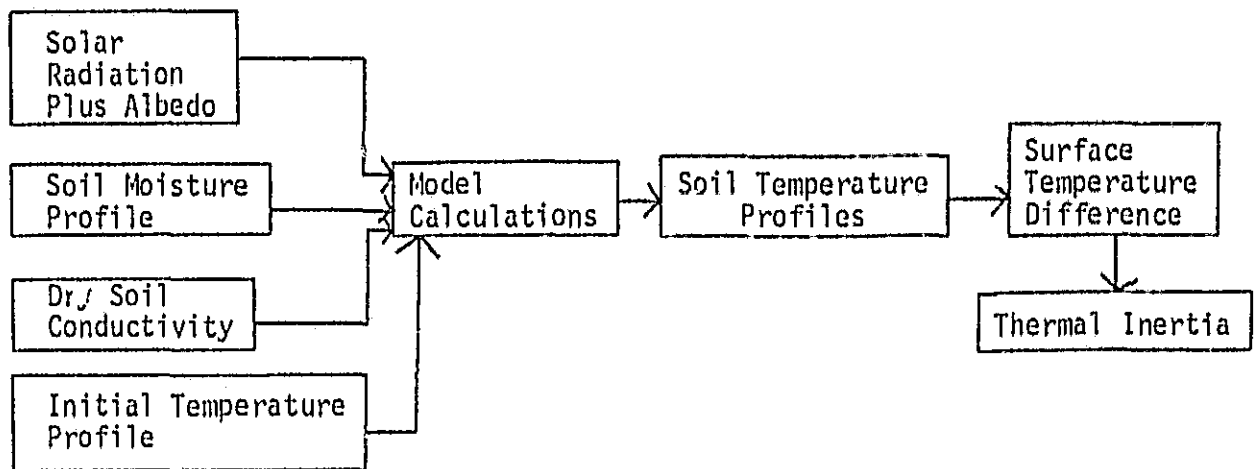


Fig. 1. Schematic representation of the finite-difference model in its present format.

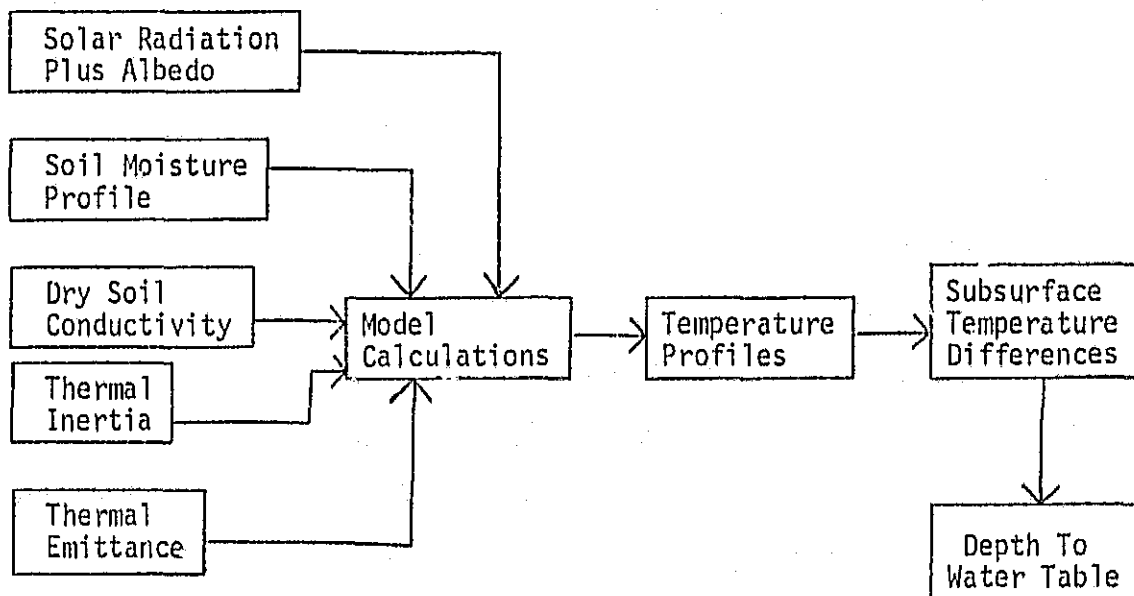


Fig. 2. Future format of the finite-difference model.

The model was modified using field measurements from two fallow plots at the South Dakota State University irrigation farm near Redfield, South Dakota. One plot was irrigated to increase its soil moisture while the other one was left as a dryland plot. Thermocouples were buried on these sites and temperature measurements were taken at depths of 1 cm, 5 cm, 10 cm, 25 cm, and 50 cm. Thermal emittance was measured for both plots using a Barnes PRT-5 mounted on a scanning apparatus. Net radiation and incoming solar radiation and other selected data such as cloud cover and wind velocity were also measured.

Measured and calculated temperature profiles are presently being used to calculate dry thermal conductivity for the soil to allow the model to be used to evaluate the conductivities at each site from measured temperature profiles.

D. Publications

None at this time.

E. Recommendations

None at this time.

F. Funds Expended

Total funds expended for the July-September period were \$5,850.09.

G. Data Utility

At this time no spacecraft data have been acquired for examination.

Appendix A

Fortran program for the finite-difference
heat flow simulation model.

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//*          R LUND CALC OF SOIL PROFILES FOR MUCH AUG 77
// EXEC FORHCLG
//FORT.SYSIN DD *
C
C .....
C *   DX IS THE DISTANCE INTERVAL BETWEEN NECAL POINTS IN
C *   CENTIMETERS
C *   DT IS THE TIME INTERVAL BETWEEN CALCULATIONS IN SECONDS
C *   N IS THE NUMBER OF EQUALLY SPACED NECAL POINTS
C *   IJ IS THE NUMBER OF PROBLEMS TO BE SOLVED
C *   IK=1 IF CONDUCTIVITY AND DIFFUSIVITY VALUES ARE TO BE READ IN
C *   2 IF CONDUCTIVITY AND DIFFUSIVITY VALUES ARE TO BE
C *   CALCULATED
C *   PIT IS THE TIME INTERVAL BETWEEN PRINTOUTS IN SECONDS
C *   CHR IS THE INITIAL STARTING HOUR
C *   CHIN IS THE INITIAL STARTING MINUTE
C *   CDAY IS THE NUMBER OF DAYS AFTER THE INITIAL DAY WHEN THE
C *   CALCULATION IS TO STOP
C *   ENR IS THE HOUR WHEN THE CALCULATION IS TO END
C *   EMIN IS THE MINUTE WHEN THE CALCULATION IS TO END
C *   TAI IS THE AIR TEMPERATURE   AAA=DELTATEMP
C .....
C
      NCAL K1(51),K2(51),KH,YS,KH
      DOUBLE PRECISION AA1,SA1(51),SB(51),TA1(51),TR(51),ST,HC1(51),
      HC2(51),CC,OD,FK1,FK2,X21(50),X22(50)
      DIMENSION IDA(400),IDR(400),TDC(400),TDB(400),HOUR(400),
      QJSP(1420),PCTDA(400),DEPTH(400),A11(400),A12(400),
      IXQ1(400),XQ2(400),TCAA(400),PTA(51),PTP(51)
      KKK = 1
2   READ(5,1000) DX,DT,P,IJ,IK,PIT,CHR,CHIN,CLAY,ENR,EMIN
      READ(5,1001) TAI,AAA
      DEPTH(1)=1.
      DO 220 L=2,50
220  DEPTH(L)=DEPTH(L-1)-1.
      J = C
      NN = C
      NAC = C
      MIN=CHR*60 + CHIN
      N = P - 1
      DAY = C.C
      TIME = C.C
      QC = C.C
      QD = C.C
      ISI=1
C
C   SPECIFICATION OF INITIAL TEMPERATURE PROFILE
C   TAI(1) CORRESPONDS TO THE SURFACE TEMP, TAI(2) CORRESPONDS TO 1 CM ETC.
C
      READ(5,1002) TAI(1),TAI(2),TAI(6),TAI(11),TAI(26),TAI(51),TR(1),TB(2),
      TB(6),TB(11),TB(26),TB(51)
      DO 105 I=7,5
      TA(I)=(TA(6)-TA(2))/4*(I-2)+TA(2)
105  TB(I)=(TB(6)-TB(2))/4*(I-2)+TB(2)
      DO 106 I=7,10
      TA(I)=(TA(11)-TA(6))/5*(I-6)+TA(6)
106  TB(I)=(TB(11)-TB(6))/5*(I-6)+TB(6)
      DO 107 I=12,25
      TA(I)=(TA(26)-TA(11))/15*(I-11)+TA(11)
107  TB(I)=(TB(26)-TB(11))/15*(I-11)+TB(11)

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DO 100 I=27,50
  TA(I)=(TA(51)-TA(26))/25+(1-26)*TA(26)
100 TB(I)=(TB(51)-TB(26))/25+(1-26)*TB(26)
  ST = TA(1) - TB(1)
  5 J=J+1
C
C      TESTING IF CONDUCTIVITY AND SPECIFIC HEAT ARE TO BE READ
C      OR TO BE CALCULATED
C
C      IF(IJ.GT.1)GO TO 30
C      IF(IK.NC.1)GO TO 10
C
C      READ VALUES FOR CONDUCTIVITY AND SPECIFIC HEAT
C
C      READ IN VALUES FOR SPECIFIC HEAT AND COND.
C      READ(5,1003)K1(1),K1(25),K1(42),K2(1),K2(25),K2(42),
C      HC1(1),HC1(25),HC1(42),HC2(1),HC2(25),HC2(42)
C      GO TO 11
10 CONTINUE
C
C      IF CONDUCTIVITY AND SPECIFIC HEAT ARE TIME DEPENDENT,
C      CALCULATION SUBROUTINE GOES HERE
C
C      X01,Z(X)=PERCENT OF H2O
C      X1=PERCENT OF SCIL
C      HC X S=HEAT CAP
C      CS=HEAT CAP (OF SCIL)
C      CW=HEAT CAP (OF H2O)
C      K1,Z(X)=CONDUCTIVITY
C      READ(5,1004)X01(1),X01(25),X01(42),X02(1),X02(25),X02(42),X1
C      READ(5,1004)KH,KS,KA,GA,CW,CS
C      X21(1)=1.-X01(1)-X1
C      X22(1)=1.-X02(1)-X1
C      X21(25)=1.-X01(25)-X1
C      X22(25)=1.-X02(25)-X1
C      X21(42)=1.-X01(42)-X1
C      X22(42)=1.-X02(42)-X1
C      FK1=(2.0/(1+(KS/KH-1.0)*GA)+1.0/(1.0+(KS/KH-1.0)*(1-2*GA)))/3.0
C      FK2=(2.0/(1+(KA/KH-1.0)*GA)+1.0/(1.0+(KA/KH-1.0)*(1-2*GA)))/3.0
C      K1(1)=(X01(1)*KH+FK1*X1*KS+FK2*X21(1)*KA)/(X01(1)+FK1*X1+FK2*X21(1)
C      K2(1)=(X02(1)*KH+FK1*X1*KS+FK2*X22(1)*KA)/(X02(1)+FK1*X1+FK2*X22(1)
C      K1(25)=(X01(25)*KH+FK1*X1*KS+FK2*X21(25)*KA)/(X01(25)+FK1*X1+FK2
C      X21(25))
C      K2(25)=(X02(25)*KH+FK1*X1*KS+FK2*X22(25)*KA)/(X02(25)+FK1*X1+FK2
C      X22(25))
C      K1(42)=(X01(42)*KH+FK1*X1*KS+FK2*X21(42)*KA)/(X01(42)+FK1*X1+FK2
C      X21(42))
C      K2(42)=(X02(42)*KH+FK1*X1*KS+FK2*X22(42)*KA)/(X02(42)+FK1*X1+FK2
C      X22(42))
C      HC1(1)=X1*CS+X01(1)*CW
C      HC2(1)=X1*CS+X02(1)*CW
C      HC1(25)=X1*CS+X01(25)*CW
C      HC2(25)=X1*CS+X02(25)*CW
C      HC1(42)=X1*CS+X01(42)*CW
C      HC2(42)=X1*CS+X02(42)*CW
11 CONTINUE
DO 6 I=1,24
  K1(I)=K1(1)-((K1(25)-K1(1))/17.)*(I-1)

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      K2(1)=K2(0)-((K2(25)-K2(0))/17.)*(0-1)
      HC1(1)=HC1(0)-((HC1(25)-HC1(0))/17.)*(0-1)
4     HC2(1)=HC2(0)-((HC2(25)-HC2(0))/17.)*(0-1)
      DO 10 I=26,51
      K1(1)=K1(25)+((K1(42)-K1(25))/17.)*(1-25)
      K2(1)=K2(25)+((K2(42)-K2(25))/17.)*(1-25)
      HC1(1)=HC1(25)+((HC1(42)-HC1(25))/17.)*(1-25)
      HC2(1)=HC2(25)+((HC2(42)-HC2(25))/17.)*(1-25)
      WRITE(6,2990)X01(0),X01(25),X01(42),X02(0),X02(25),X02(42),
      CHC1(0),HC1(25),HC1(42),HC2(0),HC2(25),HC2(42),K1(0),K1(25),
      K1(42),K2(0),K2(25),K2(42)
2950 FORMAT('X01(0)=',F10.4,' X01(25)=',F10.4,' X01(42)=',F10.4,'
C' X02(0)=',F10.4,' X02(25)=',F10.4,' X02(42)=',F10.4,'
C' HC1(0)=',F10.4,' HC1(25)=',F10.4,' HC1(42)=',F10.4,'
C' HC2(0)=',F10.4,' HC2(25)=',F10.4,' HC2(42)=',F10.4,' K1(0)=',
C' F10.4,' K1(25)=',F10.4,' K1(42)=',F10.4,' K2(0)=',F10.4,'
C' K2(25)=',F10.4,' K2(42)=',F10.4)
      DO 31 I=1,51
      WRITE(6,3000)K1(1),I,K2(1),I,HC1(1),I,HC2(1)
3000 FORMAT('K1(',I2,')=',F9.5,3X,'K2(',I2,')=',F9.5,3X,'HC1(',I2,')=',
C' F9.5,3X,'HC2(',I2,')=',F9.5)
      31 CONTINUE
      24 AA1=DT/(2*DX*DX)
      26 DO 28 I=1,N
      A1(1)=AA1/HC1(1)
      28 A12(1)=AA1/HC2(1)
      GO TO 45
      30 CONTINUE
C
C      CALL SUBROUTINE TC CALCULATE THE SURFACE HEAT FLUX
C
C
C      CALL QHEAT(QC,QD,DT,DX,TA,TP,P,CHR,CMIN,TA1)
C      CALCULATION OF INTERNAL NODAL TEMPERATURES
      DO 15 I=2,N
      SA(1)=A1(1)*((K1(1)-1)+K1(1))*TA(1-1)+(1/A1(1)-K1(1-1)-2*K1(1)-
      K1(1+1))*TA(1)+(K1(1)+K1(1+1))*TA(1+1)
      15 SB(1)=A12(1)*((K2(1)-1)+K2(1))*TB(1-1)+(1/A12(1)-K2(1-1)-2*K2(1)-
      K2(1+1))*TB(1)+(K2(1)+K2(1+1))*TB(1+1)
C
C      CALCULATION OF SURFACE NODAL TEMPERATURES
C
      SA(1)=A1(1)*(4*DX*QC+(1/A1(1)-2*K1(1)-2*K1(2))*TA(1)+(2*K1(1)+
      12*K1(2))*TA(2))
      SB(1)=A12(1)*(4*DX*QD+(1/A12(1)-2*K2(1)-2*K2(2))*TB(1)+(2*K2(1)+
      12*K2(2))*TB(2))
C
C      CALCULATION OF LOWER BOUNDARY TEMPERATURES
C
      SA(M)=TA(M)
      SB(M)=TB(M)
C
C      REASSIGNMENT OF NODAL TEMPERATURES FOR NEXT ITERATION
C
      DO 40 I=1,N
      TA(1)=SA(1)
      40 TB(1)=SB(1)
C
      IF(TIME.L1.0)GO TO 41
      ST = TA(1)-TB(1)

```

C
C
C THIS PORTION OF THE PROGRAM WRITES OUT THE PERTINENT DATA.

45 NHR=CMR
NPI=CPIN
IF (P.CI.92) GO TO 50
NAN=NPI
PAN=NHR/2
HAD=NAN*2
IF (HAR.EC.NH) GO TO 52
50 WRITE (6,2000)

C
C
C THE FOLLOWING SEQUENCE IS NECESSARY SO ONE MAY PRINT
C
C 2000 HOURS INSTEAD OF 200 HOURS

52 IF (NHR.EC.9) GO TO 56
IF (NPIA.EC.9) GO TO 54
WRITE (6,2001) HAC,NHR,NAC,NPIN
GO TO 60
54 WRITE (6,2002) NAC,NHR,NPIN
GO TO 60
56 IF (NMIN.EC.9) GO TO 58
WRITE (6,2003) NHR,NAC,NPIN
GO TO 60
58 WRITE (6,2004) NHR,NPIN
60 WRITE (6,2005) DT
WRITE (6,2006) TAIL,CC
WRITE (6,2007) T3(1),CD
WRITE (6,2008) ST
WRITE (6,2009)
WRITE (6,2010)
WRITE (6,2011)

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C
C
C THIS WILL PUT THE TABLE OF DATA IN 4 EQUAL COLUMN GROUPINGS

PAN = P/4
HAD = PAN*4
KA = P - PAN
DO 70 KAH=1,PAN
MDA = NIN
MPA = PUA
IF (KA.EC.1) MPA = MPA + 1
HDD = MPA + PAN
MPD = PUD
IF (KA.EC.2) MPD = MPD + 1
HDC = MPD + PAN
MPC = PUC
IF (KA.EC.3) MPC = MPC + 1
PDD = MPC + PAN
70 WRITE (6,2012) MDA,TA(MDA),TB(MDA),HDD,TA(HDD),TR(MDD),
IMDC,TA(MDC),TB(MDC),MPC,TA(MPC),TB(MPC)
WRITE (6,2013)
MDA = MDA + 1
HDD = HDD + 1
MPC = MPC + 1
IF (KA.EC.3) GO TO 72
IF (KA.EC.2) GO TO 74
IF (KA.EC.1) GO TO 76
GO TO 80
72 WRITE (6,2013) MPC,TA(MPC),TB(MPC),

```

74 WRITE(6,2014)PDB,TA(PDB),TP(PDB)
76 WRITE(6,2015)PDA,TA(PDA),TP(PDA)
   WRITE(6,2007)
   WRITE(6,2009)
C
C
C      END OF PRINTOUT ROUTINE
C
20 CONTINUE
   TIME = C.C
   IF(PDB.NE.ANISO) GO TO H1
C
C      CONVERTING TEMP FROM DOUBLE PRECISION TO SINGLE FOR PLOT PROGRAM
C
      GO TO 25C I=1,51
      PTA(I)=TA(I)
25C PTD(I)=TP(I)
      CALL PLOT A(I)SP,10.,35.,-50.,0.,11
      CALL PLOT P(PTA,DEPTH,'A',50)
      CALL PLOT C('SOIL TEMPERATURE PROFILE FOR SITE A',35,'LEVEL IN CM'
A,11,'TEMPERATURE',11)
      CALL PLOT A(I)SP,10.,35.,-50.,0.,11
      CALL PLOT P(PTD,DEPTH,'A',50)
      CALL PLOT C('SOIL TEMPERATURE PROFILE FOR SITE B',35,'LEVEL IN CM'
A,11,'TEMPERATURE',11)
21 CONTINUE
C
C      TESTING IF CALCULATIONS HAVE RUN FOR DESIRED TIME LENGTH
C
      IF(CPIN.LT.CPIN)GO TO H4
      IF(CHR.LT.CHR) GO TO H4
      IF(DAY.LT.CDAY)GO TO H4
      GO TO 22
24 CONTINUE
C
C      CAL TO PLOT TEMP DIFFERENCE EVERY 15 MINUTES
C
201 MIN=PIN+1
   IF(MIN/(15*15).GE.1)GO TO 203
   GO TO 210
203 151=151+1
      TDA(MIN/15)=TA(1)-TP(1)
      TDA(MIN/15)=TA(2)-TP(2)
      TDB(MIN/15)=TA(6)-TP(6)
      TDC(MIN/15)=TA(24)-TP(24)
      TDD(MIN/15)=TA(51)-TP(51)
      HOUR(MIN/15)=TIME/3600.+CHR+CDAY*24.
210 CONTINUE
C
C      CALCULATION OF NEW TIME
C
      TIME = TIME + DT
      CPIN = CPIN + DT/60.
      IF(CPIN.LT.60)GO TO H8
      CHIN = CPIN - 60.
      CHR = CHR + 1.
      IF(CHR.LT.24)GO TO H8
      CHR = CHR - 24
      DAY = DAY + 1
28 CONTINUE
   GO TO 5
30 CONTINUE

```

```

CALL PLOT AIJSP,0.,25.,-2.,3.,1)
CALL PLOT PINDUR,TDAA,141,26)
CALL PLOT C1'SURFACE TEMPERATURE DIFFERENCE VERSUS TIME',42,
1'TEMP DIFFERENCE',15,'HOUR',4)
CALL PLOT AIJSP,0.,25.,-2.,3.,1)
CALL PLOT PINDUR,TDAA,141,26)
CALL PLOT C1' 1CM TEMPERATURE DIFFERENCE VERSUS TIME',37,
1'TEMP DIFFERENCE',15,'HOUR',4)
CALL PLOT AIJSP,0.,25.,-2.,3.,1)
CALL PLOT PINDUR,TDAA,141,26)
CALL PLOT C1' 5CM TEMPERATURE DIFFERENCE VERSUS TIME',37,
1'TEMP DIFFERENCE',15,'HOUR',4)
CALL PLOT AIJSP,0.,25.,-2.,3.,1)
CALL PLOT PINDUR,TDAA,141,26)
CALL PLOT C1' 25CM TEMPERATURE DIFFERENCE VERSUS TIME',37,
1'TEMP DIFFERENCE',15,'HOUR',4)
CALL PLOT AIJSP,0.,25.,-2.,3.,1)
CALL PLOT PINDUR,TDAA,141,26)
CALL PLOT C1' 50CM TEMPERATURE DIFFERENCE VERSUS TIME',37,
1'TEMP DIFFERENCE',15,'HOUR',4)
KKK = KKK + 1
IF(KKK,LE,(J)GO TO 2
1000 FORMAT(2(F5.0),3(15),5X,6(F5.0))
1001 FORMAT(F2.2,F2.1)
1002 FORMAT(1(F3.1))
1003 FORMAT(16F10.6/6F3.7)
1004 FORMAT(6F7.6)
1005 FORMAT(7F4.3)
2000 FORMAT(11)
2001 FORMAT(11,'TEMPERATURE PROFILE AT ',4(11),' HOURS')
2002 FORMAT(11,'TEMPERATURE PROFILE AT ',2(11),12,' HOURS')
2003 FORMAT(11,'TEMPERATURE PROFILE AT ',12,11,11,' HOURS')
2004 FORMAT(11,'TEMPERATURE PROFILE AT ',2(12),' HOURS')
2005 FORMAT(10,'ITERATION INTERVAL IS ',F4.0,' SECONDS')
2006 FORMAT(10,'SURFACE TEMPERATURE TA = ',F6.3,10X,'SURFACE HEAT ',
1'FLOW IN PROFILE A IS ',F15.10)
2007 FORMAT(11,20X,'TD = ',F6.3,10X,'SURFACE HEAT FLOW IN PROFILE',
1'D IS ',F15.10)
2008 FORMAT(10,'SURFACE TEMPERATURE DIFFERENCE = ',F6.3)
2009 FORMAT(10)
2010 FORMAT(10,4(4X,'DEPTH',4X,'TEMP A',5X,'TEMP B'))
2011 FORMAT(11)
2012 FORMAT(11,4(2X,'+',2X,13,5X,F6.3,5X,F6.3),2X,'+')
2013 FORMAT(11,1.62X,'+',2X,13,2(5X,F6.3))
2014 FORMAT(11,1.32X,'+',2X,13,2(5X,F6.3))
2015 FORMAT(11,1.2X,'+',2X,13,2(5X,F6.3))
STOP
END
SUBROUTINE ORCAT(CC,CD,CT,CX,TA,TP,M,CHR,ENIN,TAI)
DOUBLE PRECISION TA(51),TD(51),CC,CD,CTC,CTD,TAU,TTR,TFE
C
C      SIG IS THE STEFAN-BOLTZMANN CONSTANT USED TO CALCULATE THE
C      RADIATION TERM
C
C      SIG = C.CCC136
C      AMIN = CPM/60.
C      AHR = CHR / AMIN
C      TAL=AMIN-6.75
C
C      CONVERSION OF TEMPERATURES IN DEGREES CENTIGRADE TO

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C      DEGREES KELVIN
C
C      41 TIE=(TAI+273.16)/100
C          TIG = (TA(1) + 273.16)/100.
C          TID = (TH(1) + 273.16)/100.
C          TIR = SIG*TIE**4
C
C      CALCULATION OF SURFACE HEAT LOSS TERM
C
C          QG=-(SIG*TIG**4-TIR)
C          QD = -(SIG*TID**4-TIR)
C
C      CALCULATION OF SURFACE HEAT FLUX
C          THIS TESTS TO DETERMINE WHETHER THE TIME IS AT NIGHT OR
C          DURING THE DAY (0600 TO 1800 IS DAY)
C
C          IF (TAL.LL.C.120 TO 100
C          IF (TAL.UU.13.100 TO 100
C          QG = C.CC94*DSIN(TAU*3.14159/13) + QG
C          QD = C.CC94*DSIN(TAU*3.14159/13) + QG
C      100 CONTINUE
C          RETURN
C          END
/*
//GO.FTC6FC01 DB SYSOUT=A,CCP=(RECFM=FA),OUTLIN=6000
//SO.SYSIN DD *
1.  CC.  01  1  2  3600.  1.  1.  7.  0.
CCCCCCC0
121134177192205193120137168170204201
C2CCF25CC4CC0275025004500549
CC017CC01C5CC6CC006031250C010000000400000
/*

```